

What is claimed is:

1 1. An analysis device for analyzing an object having a
2 first side and a second side comprising:

3 an excitation source positioned on a first side of said object,
4 said excitation source generating an excitation beam through said object;
5 said excitation beam forming a imaging beam on the second side of said
6 object,

7 an optical assembly positioned on the second side of the
8 object receiving the imaging beam; and

9 a detector disposed adjacent to said optical assembly on said
10 second side of said object receiving said imaging beam and forming an
11 image of said object therein.

1 2. An analysis device for a plate having a first side and a
2 second side comprising:

3 a plate holder holding the plate;

4 a excitation source positioned on a first side of said plate
5 under said plate holder, said excitation source generating an excitation
6 beam through said plate; said excitation beam forming an imaging beam on
7 the second side of said plate,

8 an optical assembly positioned on the second side of the
9 plate receiving the imaging beam; and

10 a detector disposed adjacent to said optical assembly on
11 said second side of said plate receiving said imaging beam and forming an
12 image of said plate therein.

1 3. An analysis device as recited in claim 2 wherein said
2 optical assembly comprises a separation filter disposed on a second side of
3 said plate holder receiving the imaging beam;

4 an imaging lens positioned adjacent to said long pass filter on
5 said second side of said plate;

6 said imaging beam directed through said separation filter,
7 said imaging lens and said band pass filter.

1 4. An analysis device as recited in claim 3 wherein said
2 optical assembly comprises a band pass filter disposed adjacent to said
3 imaging lens on said second side of said plate;

4 said imaging beam directed through said separation filter,
5 said imaging lens and said band pass filter.

1 5. An analysis device as recited in claim 3 wherein said
2 long pass filter has a surface parallel to said plate.

1 6. An analysis device as recited in claim 3 further
2 comprising an opaque mask interposed between said separation filter and
3 said imaging lens.

1 7. An analysis device as recited in claim 3 wherein said
2 opaque mask has a diameter sized to prevent said excitation beam from
3 reaching said detector.

1 8. An analysis device as recited in claim 3 wherein said
2 long-pass filter comprises a filter having deep-attenuation in a stop-band
3 and sharp transition from the stop-band to a pass-band.

1 9. An analysis device as recited in claim 8 wherein said
2 separation filter comprises a Raman filter.

1 10. An analysis device as recited in claim 4 wherein said
2 laser source has an optical axis positioned orthogonal to said plate, said
3 detector, long pass filter, said imaging lens, and said band pass filter
4 coupled disposed along said axis.

1 11. An analysis device as recited in claim 2 wherein said
2 detector comprises a charge coupled device having a two-dimensional
3 array of detectors.

1 12. An analysis device as recited in claim 2 wherein said
2 excitation light source comprises fluorescent light source.

1 13. An analysis device as recited in claim 2 wherein said
2 excitation light source comprises a laser source.

1 14. An analysis device as recited in claim 2 wherein said
2 laser source has an optical axis positioned at an angle relative to said
3 plate.

1 15. An analysis device as recited in claim 2 said detector
2 positioned off said optical axis.

1 16. An analysis device as recited in claim 2 wherein said
2 plate holder is coupled to an X-Y stage.

1 17. An analysis device as recited in claim 2 wherein said
2 plate holder comprises a plurality of wells defined by a mask, said mask
3 blocking said excitation light outside said wells.

1 18. An analysis device as recited in claim 2 wherein said
2 plate has a light absorbing well former thereon having openings
3 therethrough, said excitation source generating an excitation beam through
4 said openings and plate.

5 19. An analysis device for a plate having a first side an
6 second side comprising:

7 a plate holder holding the plate;

8 an excitation light source positioned on a first side of side
9 plate under said plate holder, said laser source generating an excitation

10 beam through said plate; said excitation beam forming an imaging beam at
11 said plate, said excitation light source has an optical axis positioned
12 orthogonal to said plate;
13 an optical assembly disposed on said optical axis on the
14 second side;
15 a detector disposed adjacent to said optical assembly;
16 said imaging beam directed through said long-pass filter, said
17 imaging lens and said band pass filter.

1 20. An analysis device as recited in claim 19 wherein said
2 optical assembly comprises a long-pass filter and an imaging lens filter.

1 21. An analysis device as recited in claim 19 wherein said
2 long-pass filter is disposed on a second side of said plate holder along the
3 optical axis receiving the imaging beam.

1 22. An analysis device as recited in claim 19 wherein said
2 imaging lens positioned adjacent to said long pass filter holder along the
3 optical axis on said second side of said plate.

1 23. An analysis device as recited in claim 19 wherein said
2 band pass filter disposed adjacent to said imaging lens holder along the
3 optical axis on said second side of said plate.

1 24. An analysis device as recited in claim 19 wherein said
2 plate has a light absorbing well former thereon.

3 25. A method for analyzing a plate comprising:
4 disposing a plate having an array thereon between an
5 excitation source and a detection source;
6 directing a imaging beam to said detection source through an
7 optical assembly; and
8 forming an image of said array at said detection source.

1 26. A method as recited in claim 23 wherein said chip plate
2 comprises a plurality of wells defined by a mask and further comprising
3 blocking said excitation light outside said wells with the mask.

1 27. A method as recited in claim 23 further comprising the
2 step of filtering said imaging beam.

1 28. A method as recited in claim 23 wherein said step of
2 filtering comprises long pass filtering said imaging beam.

1 29. A method as recited in claim 23 wherein said step of
2 filtering comprises band pass filtering said imaging beam.

1 30. A method as recited in claim 23 wherein directing an
2 imaging beam to said detection source through an imaging lens.

1 31. A method as recited in claim 23 further comprising
2 reflecting a portion of said excitation beam from the optical assembly to
3 said plate.